

## **PHASE III: Full Scale Development**

### **Step 17.0 Conduct HF/S Developmental and Operational Tests**

#### **Overview:**

- This step is concerned with the planning and conduct of HF/S test and evaluation (T&E) exercises, either as an event within the HF/S program, or as a segment of the system-level T&E program.

#### **Input:**

- Requirements for DT and OT.

#### **Output:**

- Inputs to the Test and Evaluation Master Plan , and HF/S T&E plans and reports.
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### **17.1 Identify HF/S issues for test and evaluation**

#### 17.1.1 Identify questions to be resolved through HF/S test and evaluation

- 17.1.2 Identify situations where test and evaluation data will support tradeoffs

### **17.2 Develop Development Test and Evaluation (DT&E) Requirements**

#### 17.2.1 Identify extent to which DT&E data will influence selection of design concepts, and incorporate into DT&E planning

#### 17.2.2 Identify drawings, engineering models, mock-ups, etc., available for HF/S DT&E

#### 17.2.3 Identify extent to which results of evaluations of predecessor systems will input HF/S DT&E exercises

#### 17.2.4 Identify development test and Evaluation (DT&E) T&E issues

- Identify HF/S inputs to development test and Evaluation (DT&E)
- Identify categories of HF/S T&E required

#### 17.2.5 Identify T&E objectives

- Identify overall objectives of HF/S T&E
- Identify sub-objectives of HF/S T&E
- Integrate HF/S T&E objectives with system-level T&E objectives

### 17.2.6 Identify system features to be evaluated

- Identify hardware design features to be evaluated
- Identify software design features to be evaluated
- Identify system-level design features to be evaluated
- Identify procedures design features to be evaluated
- Identify documentation design features to be evaluated
- Identify communications design features to be evaluated
- Identify information handling design features to be evaluated
- Identify environmental features to be evaluated
- Identify job design features to be evaluated
- Identify aspects of human performance to be evaluated
- Identify aspects of human safety and health to be evaluated
- Identify training features to be evaluated
- Identify aspects of system manning to be evaluated
- Integrate system features to be evaluated

### 17.2.7 Identify test conditions

- Identify sources of information on test conditions
- Identify mission operation conditions to be evaluated or included in the evaluation as a control condition
- Identify conditions of readiness to be evaluated or included in the evaluation as a control condition
- Identify workload conditions to be evaluated or included in the evaluation as a control condition
- Identify personnel conditions to be evaluated or included in the evaluation as a control condition
- Identify operational conditions to be evaluated or included in the evaluation as a control condition
- Identify environmental conditions to be evaluated or included in the evaluation as a control condition
- Integrate information on test conditions

### 17.2.8 Identify T&E data requirements

- Identify test data validity requirements
- Identify test data reliability requirements
- Identify test data usability requirements
- Identify test data accuracy requirements

### 17.2.9 Identify T&E methods

- Identify candidate methods
- Identify constraints on method selection
- Identify considerations in method selection
- Identify advantages and disadvantages of alternate T&E methods
- Select T&E methods

#### 17.2.10 Identify T&E measures

- Identify HF/S T&E data requirements
- Define HF/S measures of effectiveness
- Identify data to be acquired on each measure
- Identify data acquisition and recording requirements
- Identify data analysis and integration requirements

#### 17.2.11 Identify T&E criteria

- Identify T&E criteria based on system acquisition/development requirements
- Identify T&E criteria based on lessons learned
- Identify T&E criteria based on HF/S principles and design criteria

#### 17.2.12 Develop test plan

- Collect HF/S T&E requirements and approaches for individual tests
- Develop experiment designs
- Identify requirements for mock-ups, models, facilities and instrumentation
- Describe individual tests and evaluation procedures
- Describe test procedures for experimenter and subjects
- Integrate tests
- Schedule tests

#### 17.2.13 Conduct HF/S T&E

- Select and prepare test subjects
- Acquire and prepare test materials
- Acquire and prepare test instrumentation
- Identify test initial conditions
- Initiate tests
- Monitor the progress of tests
- Terminate testing

#### 17.2.14 Prepare test reports

- prepare reports on HF/S DT&E describing major findings and implications for system design and operation
- integrate HF/S DT&E with logistics and system level DT&E

### **17.3 Develop Operational Test and Evaluation and User Test and Evaluation (OT&E/UT&E) Requirements**

17.3.1 Identify extent to which OT&E/UT&E data will influence selection of design concepts, and incorporate into OT&E/UT&E planning

17.3.2 Identify the extent to which HF/S OT&E/UT&E will be accomplished under operationally realistic conditions using personnel deemed to be typical users

### 17.3.3 Identify extent to which results of evaluations of predecessor systems will input HF/S OT&E/UT&E exercises

### 17.3.4 Identify operational test and Evaluation (OT&E) T&E issues

- Identify HF/S inputs to operational test and Evaluation
- Identify categories of HF/S T&E required

### 17.3.5 Identify T&E objectives

- Identify overall objectives of HF/S T&E
- Identify sub-objectives of HF/S T&E
- Integrate HF/S T&E objectives with system-level T&E objectives

### 17.3.6 Identify system features to be evaluated

- Identify hardware design features to be evaluated
- Identify software design features to be evaluated
- Identify system-level design features to be evaluated
- Identify procedures design features to be evaluated
- Identify documentation design features to be evaluated
- Identify communications design features to be evaluated
- Identify information handling design features to be evaluated
- Identify environmental features to be evaluated
- Identify job design features to be evaluated
- Identify aspects of human performance to be evaluated
- Identify aspects of human safety and health to be evaluated
- Identify training features to be evaluated
- Identify aspects of system manning to be evaluated
- Integrate system features to be evaluated

### 17.3.7 Identify test conditions

- Identify sources of information on test conditions
- Identify mission/operational conditions to be evaluated or included in the evaluation as a control condition
- Identify conditions of readiness to be evaluated or included in the evaluation as a control condition
- Identify workload conditions to be evaluated or included in the evaluation as a control condition
- Identify personnel conditions to be evaluated or included in the evaluation as a control condition
- Identify operational conditions to be evaluated or included in the evaluation as a control condition
- Identify environmental conditions to be evaluated or included in the evaluation as a control condition
- Integrate information on test conditions

### 17.3.8 Identify T&E data requirements

- Identify test data validity requirements
- Identify test data reliability requirements
- Identify test data usability requirements
- Identify test data accuracy requirements

### 17.3.9 Identify T&E methods

- Identify candidate methods
- Identify constraints on method selection
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- Select T&E methods

### 17.3.10 Identify T&E measures

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- Define HF/S measures of effectiveness
- Identify data to be acquired on each measure
- Identify data acquisition and recording requirements
- Identify data analysis and integration requirements

### 17.3.11 Identify T&E criteria

- Identify T&E criteria based on system acquisition/development requirements
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- Identify T&E criteria based on HF/S principles and design criteria

### 17.3.12 Develop test plan

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### 17.3.13 Conduct HF/S T&E

- Select and prepare test subjects
- Acquire and prepare test materials
- Acquire and prepare test instrumentation
- Identify test initial conditions
- Initiate tests
- Monitor the progress of tests
- Terminate testing

#### 17.3.14 Prepare test reports

- prepare reports on HF/S OT&E describing major findings and implications for system design and operation
- integrate HF/S OT&E with logistics and system level OT&E

### 17.4 Prepare inputs to the T&E Master Plan (TEMP)

#### 17.4.1 Identify human performance/HF/S issues to be included in the TEMP:

- validate that workload requirements have been met;
- validate that personnel requirements have been met;
- validate that training requirements have been met;
- validate that system safety requirements have been met;
- validate that health hazard design requirements have been met;
- validate that HF/S requirements have been met

#### 17.4.2 Identify HF/S tests to be described in the TEMP

#### 17.4.3 Identify HF/S aspects of system-level tests to be addressed in the TEMP